



The Florida Keys: Dramatically Different

Martin Moe, SAC Education/Outreach Representative

Changes due to Natural Causes

- *Global warming (considered by some scientists to be enhanced by human activity)
- *Increased water temperatures resulting in coral bleaching
- *Rising sea level
- *Increased incidence of tropical storms
- *Loss of long-spined sea urchins due to disease in 1983
- *Historic loss of commercial sponges due to periodic disease episodes
- *Increased susceptibility of fishes and invertebrates to disease-causing organisms during periods of high water temperatures and other stresses

Changes due to Indirect Human Impacts

- *Increased nutrient levels in near shore waters
- *Increased organic and bacterial pollution due to high human populations
- *Increased water turbidity from algal blooms
- *Changes in biodiversity and ecology due to intense fishing pressures

Changes due to Direct Human Impacts

- *Accumulation of chemical pollutants (petroleum and pesticides)
- *Occasional spills of chemicals and nutrients affecting localized areas
- *Habitat destruction from boat groundings on the coral reef and sea grass beds
- *Dredging of channels and canals
- *Filling of wetlands and creation of armored sea walls
- *High human contact with reef organisms in many localized areas
- *Increased and constant high turbidity in localized areas due to boating activity
- *Disruptive noise and activity around bird and wildlife rookeries
- *Intense fishing pressure on specific organisms (lobster, grouper, snapper, sharks, sponges), resulting in the widespread depletion of many species
- *Physical impact on marine life due to the presence of discarded and lost fishing gear
- *Physical and ecological changes over great areas of the seabed due to trawls and other devices

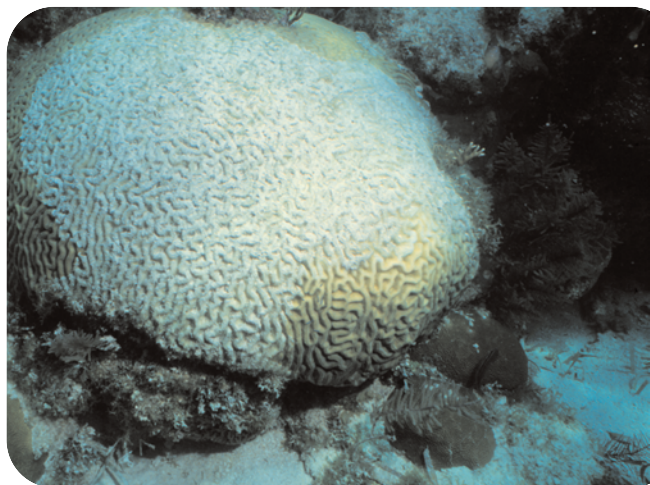
The flora and fauna of the Florida Keys, and that of the associated coral reef and Florida Bay, are dramatically different now than they were in the closing years of the nineteenth century. To those who lived here then, the natural resources of the Keys must have appeared boundless. During those times of low population and virgin natural resources, human activity did not greatly affect the aquatic life of the Keys. One hundred years ago there were no internal combustion engines, no synthetic materials, no bridges, little coastal alteration, and negligible organic pollution. There was no need for conservation law and, unfortunately, little understanding of the future effects of unbounded exploitation.

Our attitude toward our natural resources did not change much despite the limited technical advances and the increases in resource exploitation during the first 50 years of the twentieth century. Then suddenly, electronic navigation, motorized fishing boats of great capacity, huge net and trap fishing operations, accurate satellite positioning, an extensive sport fishery, and shoreline modifications built to support large human populations occurred in seemingly the blink of an eye. It took quite a while, but we have come to realize that our impact on the natural resources of this fragile area can result in environmental catastrophes.

Environmental changes in the Keys in the last 100 years have largely been negative. Coral reefs are in decline, our near shore waters are charged with nutrients, fishery resources are in danger, and human use of the Keys is increasing at an alarming rate. Much of the environmental degradation can be attributed to humans, and it is through a careful analysis of impacts and the resulting changes in natural areas that we can better understand what has happened to the Keys over the last century. Environmental change can be broadly categorized into three areas: changes due to natural causes, changes due to indirect human impacts, and changes due to direct human impacts (see text box, left).

It is necessary for the survival of the Keys environment and for the quality of life of Keys residents and visitors to do all that we can to stay and reverse

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Coral bleaching is a generalized stress response to extremes of temperature, salinity, ultraviolet radiation, and other environmental conditions.

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negative changes, regardless of the source of impact. Unfortunately, some of these are not within our ability as individuals to readily correct. This includes most of the the first category, *Changes due to Natural Causes*. Reversing global warming trends will require national and international commitments, which we can each facilitate through political action on many scales. Our efforts can have some effect in the second category, *Changes due to Indirect Human Impact*. Mediation generally requires long term, expensive, and far reaching programs that must be implemented over time and over large areas; therefore, it is here where our collective efforts must be expended. It is in the third category, however, *Changes due to Direct Human Impact*, where we can have the most immediate corrective effect, both individually and collectively, and everyone must strive to do so.

It is difficult, looking at our environment today, to attain a realistic perspective on the past and to plan for the future. However, we must work together to prevent further abuses and protect our natural resources. Although we cannot reverse the course of history, our actions as individuals at home, as well as at the local, regional, and even national level, can effect positive change for the environment and ecology of our Florida Keys.

If no one cares, the Keys will die.

If you don't know, you can't care.

If you don't care, you can't help anyone else to care.

Information and education are the keys to caring.

The Florida Keys National Marine Sanctuary holds these keys to caring.

Together, we can teach the Keys to care.

Martin Moe--Biography

Martin began his career in marine biology in 1962 working on offshore fishing boats and studying the life history of red grouper at the Florida Marine Laboratory in St. Petersburg. He was a pioneer in the early development of aquaculture of tropical marine food and ornamental fishes. Now an author and publisher, Martin and his wife, Barbara, live on Lower Matecumbe and write books on marine natural history (lobsters) and marine aquarium topics. Martin currently serves as the Education/Outreach Representative on the Sanctuary Advisory Council.

Note: This article appeared in the Winter 2001 issue of the newsletter of the Florida Keys National Marine Sanctuary, **Sounding Line**. For more information, visit: floridakeys.noaa.gov.